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Sensor with dual fit mounting method in lighting fixtures or ceilings

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Abstract: A dual fit mounting method has been developed to improve the sensor mounting efficiency and adaptivity to different kind of fixtures or ceilings.

Various sensors can be integrated into lighting fixtures (hereafter referred to simply as "fixtures"). This is as opposed to having sensors housed and/or mounted independent of a light fixture to control one or more fixtures. Examples of such fixtures include, but are not limited to, LED, fluorescent, and incandescent fixtures. Examples of such sensors include, but are not limited to, photocells, passive infrared sensors, occupancy sensors, and vacancy sensors. Accommodating the requirements and geometry of many different fixture designs can be challenging. Further, it is cost effective to have a sensor that can be installed for both fixtures and directly in ceilings (or other building surfaces).

There are many kinds of sensor mounting methods on the market, such as metal or plastic spring mounting, push tabs, and so on. These mounting methods can be either costly or prone to failure. Due to the limitation of springs, most existing sensors on the market can only be mounted onto either metal fixtures or directly to a ceiling. It can be difficult for the sensor to accommodate varying fixture or ceiling thicknesses, e.g. thicknesses in the range of 0.5mm to 12mm.

To address the issues mentioned above, a dual fit mounting method has been designed to more easily mount/integrate the sensor into a variety of lighting fixtures or directly in or to a ceiling. In this design, a sensor has the combination features including a snap-in spring and threaded body. The snap-in spring has an outward inclined angle of two degrees with a sawtooth feature to secure the sensor head in place. The threaded nut adapts to different thickness of fixture or ceilings. The threaded nut also secures the sensor firmly to the fixture (or ceiling).

There two sections of the design, as illustrated in Figure 1, one part is the sensor body; the other part is the threaded nut.

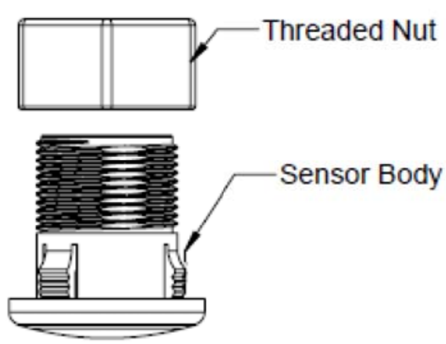

Figure 2 shows that the sensor has three evenly distributed springs around the body. Since the spring on the sensor includes the inclined angle and sawtooth feature, the installer can simply push the sensor into the mounting hole to secure the sensor in place.

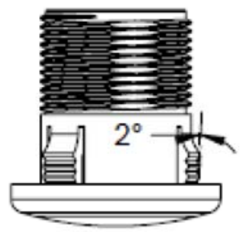

Figure 2. Sensor with three evenly distributed springs

Figure 3 illustrates the sensor with a threaded body and a threaded nut. The threaded nut can be threaded on the sensor in either orientation to adapt the sensor for different fixtures/ceiling thicknesses.

Figure 3. Sensor with threaded body and nut